



# CITY OF NEWPORT BEACH

## BUILDING DEPARTMENT

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(949) 644-3275

### ELECTRICAL/MECHANICAL/PLUMBING/FIRE ALARM PLAN CHECK CORRECTION LIST

Project Description:

Project Address:

Plan Check No.:

Date Filed:

No. Stories:

Use:

Occupancy:

Const. Type:

Architect/Engineer:

Phone:

Owner:

Phone:

Submitted Valuation:

Checked by:

Phone: (949) 644-32

Permit Valuation:

☒ 1<sup>st</sup> Check  
☐ 4<sup>th</sup> Check\*

☐ 2<sup>nd</sup> Check

☐ 3<sup>rd</sup> Check

**\*NOTE: Do not resubmit after the 3<sup>rd</sup> plan check. Call plan check engineer for an in-person recheck appointment.**

**WARNING: PLAN CHECK EXPIRES 180 DAYS AFTER SUBMITTAL.**

**THIS PLAN CHECK EXPIRES ON:**

**Approval of plans and specifications does not permit violation of any section of the Building Code or other City ordinances or State law.**

**This plan check is according to 2007 California Electrical, Mechanical and Plumbing Codes.**

- Make all corrections listed below
- Resubmit originally checked plans and indicate the location of response on this sheet. **DO NOT** resubmit after the third check. Call plan check engineer and schedule in-person recheck.
- Return this sheet with corrected plans
- For checking status of plans: call **(949) 644-3288** during business hours, or may be verified 24 hours 7 days a week via the Internet at: [www.newportbeachca.gov/building/](http://www.newportbeachca.gov/building/) or interactive voice at **(949) 644-3255.**
- For clarifications on corrections, you may call the Plan Check Engineer or schedule an appointment.
- Codes used: 2007 CBC; 2007 CMC; 2007 CPC; 2007 CEC, Title 24, 2008 California Energy Efficiency Standards.
- When new information is provided after plan check due to corrections or otherwise, additional reviewing time may be necessary upon resubmittal. Review of new information may result in additional corrections.

## **ELECTRICAL/MECHANICAL/PLUMBING**

### **Administrative**

1. Plans shall bear the wet stamp license number and signature with expiration date or an architect, engineer, or contractor license in the appropriate discipline. (Ch. 7 Div. 3 Business and Professions Code, Art 2, Sec. 6735.4)
2. Show the job address on the plans.
3. Plans shall be clearly legible, and to a scale no smaller than 1/8 inch per foot.
4. Show equipment schedule on the plans.
5. Show the use of each area. List type of equipment on plans.
6. Show the intended use of each room.
7. Show all fire rated walls and ceilings.
8. Provide minimum 2 sets of plans, 18" x 24" or larger.

### **MECHANICAL**

9. Show location and size of permanent access to mechanical equipment. (307.2 & 307.3)
10. Show access to mounted mechanical equipment. (307.5)
11. Show seismic restraint for H.V.A.C. system on the plans.
12. Show roof access to H.V.A.C. equipment on the roof.
13. Show all locations of H.V.M.C. equipment on the plans.

### **Venting**

14. Provide a fire rated enclosure around the vent. (704.2)
15. Provide an elevation of the furnace: show the draft hood, vent size, and type (i.e., double wall type B vent, positive Provide duct type smoke detectors in the supply air ducts in every air conditioning system in excess of 2,000 cfm. Multiple units serving the same room, or having a common outside air duct is considered to be one system for the determination of pressure vent, etc.) clearance and vent termination. ( 303, 304, 307, 804, 805, 806)
16. The vent shall be double wall type B. ( 802.1)
17. The vent diameter shall be equal to or greater than the diameter of the vent collar of the appliance.
18. The vent termination shall be at least 5 feet above the vent collar. (806.2)
19. Vents shall extend above the roof and shall terminate in a vent cap. Termination point shall be at least 3 feet above any forced air inlet into the building located within 10 feet, and shall be 4 feet away from the property line. (806.1 & 806.6.1)
20. Vents shall terminate at least 4 feet below or horizontally from, and 1 foot above any opening into the building. (806.6)
21. The vent shall extend vertically, except one 60 degree offset is allowed. (805.1)
22. The total horizontal run of vent plus the length of the horizontal vent connector shall not exceed 75% of the vertical height of the vent. (805.1)
23. Provide manufacturers installation instructions showing the venting criteria for the condensing furnaces. (802.5)

24. Vents shall not extend into or pass through ducts or plenums. (804.1)
25. Connectors entering a common venting system shall be offset. ( 809.2)
26. The area of common vent connector shall not be less than the area of the largest vent connectors plus 50% of the areas of the additional vent connectors. ( 809-3)

### **Condensate**

27. Provide a primary condensate drain discharging to tailpiece of lavatory, floor sink or mop sink in the unit it serves and secondary condensate drain (watertight pan) installed above the ceiling or in furred spaces. The secondary drain shall terminate over a plumbing fixture in an interior location or to a visible location at the exterior of the building or use listed wet/float switch.

### **Duct Systems**

28. Show on the plans the duct materials and gages. Gages shall be per Tables 6-A, 6-B, & 6-C (601.1).
29. Ducts shall be constructed in accordance with Ch. 6. SMACNA is not an adopted code. (601.1)
30. Provide duct type smoke detectors in every ventilation system in excess of 2,000 cfm. Multiply units serving the same room are considered one system. In lieu of duct type smoke detectors, complete coverage area detectors may be installed.

### **Fire Dampers**

31. Listed fire dampers and smoke dampers are required to be installed at all duct penetrating through area separation and occupancy separating walls. (713.10, CBC & 713.11 CBC)
32. Listed fire dampers are required to be installed at all ducts penetrating through fire rated ceilings. (713.11 CBC)
33. Provide combination smoke/fire dampers to isolate ducts serving rated corridors. (713.10 & 713.11, CBC)
34. Fire dampers shall be of the dynamic type. (713.12)
35. Remove all return air registers from the corridor. ( 404.1.8)
36. Provide a copy of the manufacturer's installation instructions for the mechanical equipment used.
37. Provide a permanent roof access. ( 307.5)
38. Provide outside air. (Title 24, Sec. 121)
39. Make-up air shall be electrically interlocked with their associated exhaust systems. (402.7)
40. Provide combination fire/smoke dampers where the toilet exhaust ducts penetrate a fire rated shaft. (713.10 & 713.11, CBC)
41. Provide combinations fire/smoke dampers at every penetration of area separation and occupancy separation wall. (713.10 & 713.11, CBC)
42. Corridors have supply and exhaust air inlets and outlets. (601.1.1)

## **Title 24**

43. Back-draft dampers shall be provided in outdoor air supply and exhaust systems. (Title 24, Sec. 150 (m) 7)
44. Provide an economizer in every cooling unit exceeding 2,500 cfm. (title 24, Sec. 144 (e))
45. Show location of thermostats. ( Title 24, Sec. 122)
46. Show signed statement of compliance (form Mech-1) on the plans. (Title 24, Sec. 10-103(a)2.C)
47. Provide heating and cooling load calculation. (title 24, Sec. 144 (b))
48. Provide complete Title 24 2005 documentation. (title 24, Sec. 10-103)
49. Show compliance with at least one of the exceptions of Sec. 144 (g) for the electrical resistance heating or provide energy budget. (title 24, Sec. 144(g); 152 (c))

## **Exhaust Ducts**

50. Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. (601.3)
51. Show location & sizes of all ventilation ducts and openings.
52. Environmental exhausts duct shall terminate outside the building and shall be equipped with a back-draft damper. (504.1)
53. Exhaust outlets for product conveying systems shall be 10 feet from the property line, 3 feet exterior roof/wall; 10 feet opening into the building; 10 feet above grade. (505.9)
54. Make-up air shall be provided for all rooms with exhaust. (505.6)
55. Exhaust duct for domestic dryers shall be 4 inches min. and shall not exceed a total length of 14 feet including two 90 degrees elbows. Two feet shall be deducted for each 90 degree elbow in excess of two. (504.3.2)
56. Provide engineering for dryer ducts exceeding 14 ft. in length. (504.3.2)
57. Dryer exhaust ducts shall be made out of metal. (504.3)
58. Laundry ventilation exhaust shall terminate at least 3 feet from the property line and 3 feet from openings into any buildings. (504.6)
59. Clothes dryer moisture exhaust duct shall not extend into or through ducts or plenums. (601.3)
60. No fire dampers are allowed in dryer exhaust ducts. (504.3) List type of cooking equipment on plans.
61. Laundry room exhaust ducts shall be made out of metal. (504.1)
62. Laundry rooms shall have 5 air changes per hour. (1203.3, CBC)
63. Show make-up air for the laundry room exhaust system. (402.1, CBC)
64. The make-up air system shall be interlocked with the associated system. (402.4)
65. Laundry room make-up air shall take into consideration the air exhausted by dryers.
66. Provide combustion smoke/fire dampers where the laundry exhaust ducts penetrate an area separation or occupancy separation wall. ( 713.10 & 713.11, CBC) List type of cooking equipment on plans.
67. Provide combustion air openings (701.1)
68. Toilet rooms in commercial buildings shall have 4 air changes per hour. (1202.2.1, CBC)

- 69. Toilet exhausts shall terminate at least 3 feet from property line and 3 feet from openings into any building (504.1)
- 70. The make-up air system shall be interlocked with the associated exhaust system (402.4)
- 71. Remove return air grill from the bathroom (404.1-7)
- 72. Provide a duct type smoke detector in the toilet exhaust system exceeding 2,000 cubic feet per minute. (608)
- 73. Toilet exhaust ducts shall be made of metal. (504.1)
- 74. Toilet exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (601.3)

### **Garage Ventilation**

- 75. Provide calculations showing that exhaust fan is capable of uniformly exhausting 1.5 cfm per foot of gross floor area. (1202.2.7, CBC) Garage exhaust to be controlled by co-sensors.
- 76. Obtain administration approval to size the garage ventilation system based on 14,000 cfm per moving vehicle. 2.5% or one vehicle (1202.2.7, CBC) Request for "Alternate Methods of Construction" form.
- 77. Provide make-up air. (505.6)
- 78. Show the termination of the garage exhaust outlet shall terminate not less than 10 feet from property line, 3 feet from exterior wall or roof, 10 feet from openings into the building, 10 feet above adjoining grade. (505.9-2)
- 79. Provide combination fire/smoke dampers where the garage exhaust ducts penetrate the fire rated shaft. (713.11, CBC)
- 80. Provide combination fire/smoke dampers where the make-up air ducts penetrate a fire rated shaft. (713.10 & 713.11, CBC)
- 81. Do not connect any other ventilation system to the garage ventilation system. (505.2)

### **Type I Kitchen Hoods**

- 82. Provide roof plans showing the location of the kitchen exhaust blower, property line and any openings into the building. (6302(3), CBC & 507.11)
- 83. Provide make-up air. (402.4)
- 84. Show sizes, gauges, and materials of all ducts and hoods. (507.3 & 508.2)
- 85. Specify on the plan, the make, model, size free area and number of filters used. (508.5)
- 86. List type of cooking equipment on plans.
- 87. Provide elevations showing finished floor, cooking equipment, grease exhaust hood, distance between cooking equipment and grease filters, overhang, finished ceiling, flushing, fire rated shaft, clearance between duct and shaft, cleanouts, slope of horizontal ducts, roof blower, diverter, distance of outlet termination above roof. In compensating hoods, also show the make-up air duct and factory built-in fire damper. (508.9, 508.7, 508.7.1, 508.7.2, 508.4, 508.7.3, 507.7, 508.7.4, 507.11, 508.6, 508.8, 506.6, 402.4, 509.8)
- 88. Each exhaust outlet within a hood shell serves not more than 12-foot section of hood. (508.9)
- 89. Duct system shall have a slope not less than ¼ inches per lineal foot toward the hood or toward an approved grease reservoir. When horizontal ducts exceed 75 feet in length, the slope shall not be less than 1 inch per lineal foot. (507.4)

90. Duct enclosures from the point of ceiling, wall, or floor penetration shall be at least one hour, except it shall be two-hour fire resistive constructions in Type I & Type II buildings. (507.6)
91. The duct enclosure shall be sealed around the duct at the point of penetration. (507.6)
92. A clearance of at least 3 inches and not more than 12 inches shall be maintained between duct and enclosure. (507.6)
93. Provide product installation instructions for the grease exhaust blower and the make-up air fan, showing cfm, static pressures, and, if required, listing by a nationally recognized testing and listing agency.
94. Provide product installation instructions for the cooking equipment showing that it is listed by nationally recognized testing and listing agency.
95. Provide product listing for compensating and/or vent less hoods. The equipment shall be listed by a nationally recognized testing and listing agency.
96. Provide product listing for the filters showing the size, free area and friction loss. ( 508.5.1)
97. Provide calculations for sizing exhaust fans and make-up air units. Calculating shall show that the fan is capable of providing the minimum required volume of air. (508.7 & 508.8)
98. Air velocity within the duct system shall be not less than 1,500 feet per minute and all not exceed 2,500 ft./min. (507.4)
99. Exposed grease duct/hood systems serving a Type I hood shall have a clearance from unprotected combustible construction of at least 18 inches. Clearance may be reduced to not less than 3 inches when the combustible construction is protected with the material required for one hour fire-resistive construction. (508.4)
100. Hoods less than 12 inches from the ceiling or wall shall be flashed solidly with materials as specified in Sec. 508.2 (507.10, 508.4, 508.4.1)
101. Exhaust outlets serving grease duct systems shall be 40 inches above roof surface, 10 feet from property line, 10 feet from air intake openings and 10 feet above adjoining grade. (507.11)
102. A grease gutter shall drain to a receptacle accessible for cleaning. (508.3)
103. Type I Hoods use over solid –fuel cooking equipment shall be provided with separate exhaust system. ( 508.7.1)
104. Remove all the return air grills from the kitchen area. (404.1-7)
105. Indicate on plans what provisions have been made for fire protection in the hood and in the duct. (509.2, 509.3 & 509.4)
106. The fire-extinguishing system shall be interconnected to the fuel or current (electrical) supply so that the fuel or current (electricity) is automatically shot off to all equipment under the hood when the system is actuated. (509.4)
107. The exhaust and make-up air systems shall be connected by electrical interlock switches. (402.4)
108. Provide kitchen layout plans showing location of hood, ducts eventual shafts and make-up air. (507.6)
109. Provide roof plans showing the location of the kitchen exhaust blower, property line and any openings into the building. ( 6302(3) CBC, 507.11)
110. Provide make-up air. (402.4)
111. Show sizes, gauges, and materials of all ducts and hoods. (508.2 & 507.3)
112. Specify on the plans, the make, the model, HP, cfm, and static pressure rating of fans used.
113. List type of cooking equipment on plans.

114. Provide elevations showing finished floor, equipment under the hood, hood, distance between finished ceiling, flushing, eventual fire rated shaft, clearance between duct and shaft, cleanouts, roof, blower, diverter, distance of outlet termination above the roof. (508.9, 508.7, 508.7.1, 508.7.2, 508.4, 508.7.3, 507.7, 508.7.4, 507.11, 508.6, 508.8, 506.6, 402.4 & 509.8)
115. Provide construction detail for fire resistive grease duct shaft.
116. Provide installation instructions for the exhaust blower and the make-up air fan, showing cfm, static pressure, and, if required, listing by nationally recognizing testing and listing agency.
117. Provide product listing for the cooking equipment showing that it is listed by nationally recognized testing and listing agency.(507.13)
118. Provide calculations for sizing exhaust fans and make-up air units. Calculations shall show that the fan is capable of providing the minimum required volume of air determined by formulas. (508.7 & 508.8)
119. Remove all of the return air grills from the kitchen area. (404.1-7)
120. The exhaust and make-up air systems shall be connected by electrical interlock switch. (402.4)
121. Provide cleanouts per code (508.3)
122. Provide kitchen plans showing location of hoods, duct shafts, make-up air, open able windows, and their area and volume of the kitchen. (507.6 & 507.9)
123. Exhaust outlets shall be 24 inches above roof surface, 10 feet from property line, 10 feet from air intake openings and 10 feet above adjoining grade. (507.11)
124. Provide a list of items to be cooked or baked under the hood. (507.2)
125. Provide manufacturer listing on approved Type I hood fire-resistive duct wrap minimum two layer system required.

## **Refrigeration**

126. A 3-foot wide and 6 feet 8 inches high clearance shall be provided around at least two sides of all moving machinery. (1106.2)
127. Provide calculations showing that the capacity of the exhaust system complies with the section. (1107.2)
128. A switch of the break-glass type, controlling the emergency purge ventilation system, shall be provided adjacent to and outside of the exit door. (1107.5)
129. Show make-up air inlets and exhaust outlets on the plan. (1107.1)
130. Make-up air shall be from the outside of the building and shall be equipped with a back draft damper. (1107.1, 1107.9)
131. Exhaust shall be discharged at least 20 feet from the property line. Show this on the plans. (1107.7)
132. Only equipment essential to the operation of the refrigeration system shall be allowed in the machinery room. (1108)
133. Show on the plans the make, model, HP, cfm, & static pressure rating of the fans.
134. Provide product listing for all fans used showing their cfm & static pressure rating.
135. State type of refrigerant. (1102)
136. Show location of refrigerant-vapor detectors. (1106.4)
137. Show engine exhaust pipe.
138. Show clearances for the engine exhaust pipe. It shall be a minimum of 18 inches from combustible construction and 2 inches from non combustible construction. (814.2)

- 139. Provide calculations for smoke control system. (905.2.2, CBC)
- 140. Write the cfm at every register during smoke mode.
- 141. Show the termination of engine exhaust pipes. (806.1 & 806.6)
- 142. The engine exhaust pipe shall extend above the roof surface, and shall be located not less than 12 inches from any openings into the building, 2 feet from the adjoining building and 7 feet above grade when located adjacent to a public walkway. ( 817.5)
- 143. Enclose the engine exhaust pipe in a fire rated shaft. (814.1.9)

## **Combustion Air**

- 144. Show location and size of all combustion-air openings or ducts. (702.1, Table 7-A)
- 145. Provide calculations for the combustion air. Size of openings or ducts shall be per Table 7-A. (707)
- 146. Dampers are not allowed in combustion-air ducts. (702.2 & 704.2)
- 147. Show combustion air. (701.1)
- 148. Dampers are not allowed in combustion-air ducts. (704.2)
- 149. Show room ventilation.
- 150. The room ventilation shall be considered in the combustion air requirement. (706)
- 151. Show the room ventilation exhaust. (609.10)
- 152. Justify either by product listing or engineering calculations the amount of outside air. (706)
- 153. Combustion air shall not be drawn from the garage. (703.3)
- 154. Provide outside air registers and exhaust air registers in every room.
- 155. Provide calculations showing that the stair shaft has a minimum positive differential pressure of 0.05 inches of water gauge. (1005.3.3.7.1.4, CBC)
- 156. Provide calculations showing that the vestibule has a minimum positive differential pressure of 0.05 of water gauge. (1005.3.3.7.1.4, CBC)

## **PLUMBING**

### **Water Supply**

- 157. Install a control valve in the domestic water supply to each building. (605.2)
- 158. Show all new and all existing devices located between the city water services and building plumbing system that causes pressure losses or pressure gains in the system. Devices shall include, but not be limited to pumps, water softeners and submeters. (610.2)
- 159. State the make(s), model(s), size(s) of the above items and indicate if they are new or existing. (610.2)
- 160. Provide manufacturer's specification sheets for each device indicating the pressure loss through the device(s) from 0 flow to the rated flow. (610.2)
- 161. Indicate on the plans, all fixture unit loads in addition to the loads of new fixtures including but not limited to existing fixtures, irrigation loads, make up water for cooling towers and boilers, demand for future use, and any other uses. (Appendix A, Sec A2)
- 162. Provide hydraulic calculations for sizing the cold and hot water systems. (610)



163. The minimum water pressure supplied to the most remote fixture shall not be less than the requirements of the fixture and not less than 15 psi, whichever is higher. (608.1)
164. Indicate on plans the makes and models of the water closets, urinals and water heaters used. (608.1)
165. Indicate on the plans the piping materials for the domestic water system. (604)
166. An approved pressure regulating valve (PRV) shall be installed to reduce the water pressure at any fixture to 80 psi or less. (608.2)
167. Provide a copy of the manufacturer's listing for the PRV's used showing pressure drop through them. (608.2)
168. Provide a reduced pressure principle backflow preventer (RP) at the meter. Show the make, model, and size of the RP on the plans. (610.2)
169. Provide a copy of manufacturer's listing for the RP used showing the pressure losses. (610.2)
170. Show the size of the water meter on the riser diagram. (610.2)
171. Provide a temperature and pressure relief valve on the water heater. The valve shall discharge to exterior grade. Pressure relief valves for water heaters installed inside a building shall discharge to a floor sink or mop sink. (608.3 & 605.5)
172. Provide an approved thermal expansion tank at the water heater. Show it on the riser diagram. (608.3)
173. State the make and model of the thermal expansion tank. (608.3)
174. Showers and tub showers shall be provided with individual control valves of the pressure balance or the thermostatic mixing valve type. (420.0)
175. State make, model, rated pressure, and gpm, of water pumps.
176. Provide a pump performance curve for the water pump(s) being used.
177. Provide water heater budget. (Title 24, Sec. 151 (b) 1 & 151 (f) 9)

### **Sanitary Drainage**

178. Indicate the piping materials on the plans. (701.0)
179. Show the slope of the horizontal drainage piping. (708.0)
180. Provide suds relief. (711.0)
181. The aggregate cross sectional area of the vent shall not be less than that of the largest required building sewer. (904.0)
182. Provide clearance from Industrial Waste. (307.0) **Water Quality Department.**
183. Provide product listing for the grease interceptor. Size per 2001 CPC, Appendix H.
184. Show details for the island venting. (909.0)
185. Install a cleanout every 100 feet or manhole every 300 feet in the building sewer (site sewer) in straight runs and for each aggregate horizontal change in direction exceeding 135 degrees. (719.1 & 719.6)
186. Provide lot subdivision. The building sewer shall not cross lot lines. (721.1)
187. All wet vented fixtures shall be within the same story. (908.1)
188. Provide a separate vent for each waste branch line exceeding 15 feet in length. (910.3)
189. The minimum area for any vent installed in a combination waste and vent system shall be at least 2 the cross sectional area of the drain pipe served. (910.3)

- 190. Each drain pipe and each trap in a combination waste and vent system shall be 2 pipe sizes larger than the sizes required by Chapter 7, Sanitary Drainage. (910.4)
- 191. No vertical waste pipes, toilets, or urinals are allowed in combination waste and vent systems. (910.5 & 910.7)
- 192. Relief vents shall be provided every 100 feet along mains. (App. B, Sec B3)
- 193. The discharge line from the ejector shall be provided with an accessible check valve and gate valve. The gate valve shall be located on the discharge side of the check valve. The gate valve and check valve shall be located outside the pit. (710.4)
- 194. Provide dual pumps each capable of handling the load independently. (710.1)
- 195. Provide air-tight cover for the sump. (710.10)
- 196. Sump(s) shall be provided with a vent pipe which shall extend through the roof. (710.7)
- 197. Show high water level. It shall be at least 2 inches below the lowest inlet. (710.9)
- 198. Sumps receiving waste from water closets shall have a minimum 2 inches discharge. (710.3)
- 199. Allow two fixture units for each gallon per minute discharging from the sewer ejector. (710.5)

### **Fuel Gas Piping**

- 200. Indicate on the plans the material for the gas piping. (1210)
- 201. Indicate on the plans the total developed length of the system from the meter or regulator to the most remote gas outlet. (1217.2)
- 202. Provide a separate gas shutoff valve for each system. (1211.0)
- 203. Indicate on the plans the hourly volume (CFH) of gas required at each outlet. (1216.2)
- 204. No gas pipe shall be installed under the building. (1211.3)
- 205. Medium pressure systems over 14 inches W.C. (1/2 PSI) must have a pre-approval from the gas supplier, a mechanical equipment demand of 3,000,000 BTU or more and would require pipe sizing larger than 4 inches to meet C.F.H. demand. An "Alternate Methods of Construction" request form must be submitted to the Building Department for review prior to approval of request for medium pressure gas.
- 206. Provide manufacturer's cut-sheet for regulator showing outlet pressure at the selected setting (1218.1)
- 207. An approved gas valve shall be installed immediately preceding each regulator. (1218.5)
- 208. Pressure regulator shall be vented to the outside of the building. (1218.4)
- 209. Pressure engineering calculations used in sizing the piping system. (1217.3)
- 210. Provide a copy of administrative approval allowing the use of medium pressure gas [MAX 5 PSI]
- 211. Specify type of fittings. (Flanges are not approved fitting.) (1211.1)
- 212. Provide a copy of manufacturer's cut-sheet for vapor extraction unit showing volume and pressure of gas required to operate the unit. (1216.2)
- 213. Provide an approved type check valve at each gas connection to the vapor extraction unit. (1210.4)
- 214. The vapor extraction unit shall be approved by the administrative authority or tested and listed to a nationally recognized standard, or tested and certified to a standard acceptable to the administrative authority.
- 215. Indicate on the plans the type of piping material. Underground (U/G) piping to be (P.E.) polyethylene plastic pipe.

## **Storm Drainage**

- 216. Provide riser diagram.
- 217. Indicate on the riser diagram the area, in square feet, covered by each drain. (App. D, Sec. D-3, 1101.11.1)
- 218. Indicate on the plans the slope of horizontal piping. (Table 11-1 and Table 11-2) 2001 CPC.
- 219. Indicate overflow drain. Otherwise, indicate the reasons for not having them. (1101.11.2.1)
- 220. Roof drain and overflow drains shall be piped independently to the outside of the building. (1101.11.2.2)

## **Sump Pumps**

- 221. Show size, length, and type of material of the pump discharge line. (1101.3)
- 222. Backwater valves shall be installed to prevent flooding of the garage from outside water. (1105.5.5)
- 223. The discharge line from the sump shall be provided with an accessible backwater valve. (710.4)
- 224. Check valve shall be located outside the pit. (710.4 & 1110.2)
- 225. Sump(s) shall be made of concrete, metal or other approved materials. Fiberglass sumps shall be approved materials. Fiberglass sumps shall be approved by the administrative authority.
- 226. Provide dual sump pumps. (1101.13)
- 227. Minimum size of pump shall be 15 gpm (1101.5.3)
- 228. Provide an airtight cover. (1101.5.3)
- 229. The sump pit shall be at least 15 inches in diameter and 18 inches in depth. (1101.5.3)
- 230. The discharge line from the sump shall be at least 1-1/2 inches in diameter. (1101.5.3)
- 231. Where the pump discharge line connects to a horizontal drain line, such connection shall be made from the top through a wye branch fitting. (710.4)
- 232. The lowest inlet to the sump shall have a minimum clearance of 2 inches above the high water level. (710.9)
- 233. Sump(s) shall be provided with a vent pipe which shall extend to the roof. (710.7)
- 234. Show load discharging into the sump.
- 235. Show the make, model, and HP of the pump on plan. Also provide pump performance curves
- 236. Provide a riser diagram showing the sump, sump inlet and outlet, check valves and gravity line.
- 237. State length of pipe and elevation difference between the bottom of the sump and gravity line.
- 238. Show high water level. It shall be at least 2 inches below the lowest inlet. (710.9)
- 239. Show subsurface drainage on the plumbing plans (Civil drawings are for reference only).
- 240. State piping materials (1101.3)
- 241. Non-perforated piping shall be made of approved materials for sanitary drainage system. (1101.3a)
- 242. Backwater valves shall be installed to prevent flooding of the garage from subsurface water. (1105.5)
- 243. Sump shall discharge into a gravity pipe. (710.12 & 710.2)
- 244. The discharge line from the sump shall be provided with an accessible check valve. (710.4)
- 245. Check valve shall be located outside of the pit. (710.4 & 1110.2)

- 246. Sump(s) shall be made of concrete, metal, or other approved materials. Fiberglass sumps shall be approved administratively. (710.8)
- 247. Please specify the type of material on the plan or specify make, model, and research report number of the prefabricated sump. (710.8)
- 248. Minimum size of pump shall be 15 gpm. (1101.5.3)
- 249. Provide an airtight cover. (1101.5.3)
- 250. Where the pump discharge line connects to a horizontal drain line, such connection shall be made from the top through a wye branch fitting. (710.4)
- 251. The lowest inlet to the sump shall have a minimum clearance of 2 inches above the high water level. (710.9)

## **ELECTRICAL**

### **General Requirements**

- 252. Provide single line diagram. (215-5). Show conduit and conductor sizes with ground electrode detail.
- 253. Specify the interrupting rating, withstand rating of devices, %impedence of transformer(s), line impedance per ft. (110-9, 110-10)
- 254. No piping, ducts or equipment foreign to electrical equipment shall be permitted to be located within 6 feet above the electrical equipment or to the structural ceiling above the space of electrical equipment whichever is lowest.
- 255. Indicate the provisions to insure the proper operation of G.F.I. equipment on a separately grounded service and generator system. (110-10)
- 256. Provide and maintain required work space, adequate illumination, access to work space and head room for and about electrical equipment.
- 257. For electrical equipment rated 1200 amperes or more and over 6 feet wide, there shall be one entrance not less than 24 inches wide at each end. (110-16 (c))
- 258. Provide protection from physical damage for switchboards, panel boards and other electrical equipment. ( 384-4, 110-17(b))
- 259. Equipment in fan room shall only serve the load that is permitted in such rooms. ( 300-22(b), MC Sec. 601.1.2)
- 260. Add note to plans, "City of Newport Beach amendments to 2004 CEC use rigid metal conduit in all areas exposed to weather, provide ground wire inside all flexible metal conduit, and metal conduit shall not be installed in contact with earth."

### **Service Calculations**

- 261. Correct excessive voltage drop on branch circuit(s). (210-19(a))
- 262. Provide a receptacle outlet within six feet of any point along the wall in livable rooms of dwelling occupancies. ( 210-52(a))
- 263. Provide show window lighting(s) and receptacle branch circuit(s) and outlets. (210-62, 220-12)
- 264. A single receptacle installed on an individual branch circuit shall have an ampere rating of an individual branch circuit shall have an ampere rating of not less than that of a branch circuit. Indicate the receptacle rating. (210-21 (b)(1))
- 265. Correct excessive voltage drop on feeder(s).(215-2 (b))

### **Branch Circuits**

- 266. Branch circuits' loads were incorrectly calculated or omitted. (220-3)
- 267. Provide 150 VA loading for every 2 feet or track light.
- 268. Provide proper feeder, panel board, and branch circuit ampacity for general lighting as required for particular occupancy. (220-3(b) & 10, 215-5)
- 269. Provide a minimum of 1200 VA exterior sign or outline lighting system branch circuit. (800-5(b)(3))
- 270. Provide a dedicated branch circuit for lighting in each elevator car. (620-22)
- 271. Feeder loads were incorrectly calculated or omitted. (220-10)
- 272. Provide a minimum of 200 VA for each linear foot of show window. (220-12)
- 273. Feeder and branch circuit rating shall be based on not less than noncontinuous loads and 125% of continuous loads.(220-3, 220-10(b))
- 274. Provide 180 VA of load for each general use receptacle. (220-3(c)(7))
- 275. Small Appliance branch circuits shall be rated at 1500 VA each. (220-15(a))

### **Service Equipment**

- 276. Service disconnect(s) shall be located nearest the point of entrance of the service entrance conductors. Service entrance conductors shall not extend horizontally into a building unless encased in minimum 2 inches of concrete (230-780(a))
- 277. No more than six service disconnecting means is permitted at any one location. (230-71(a))
- 278. No more than one service disconnecting means is permitted for motor control centers. (430.95)
- 279. The service equipment shall have a rating not less than the load served. This load shall be calculated per article 220. (230-79)
- 280. The two to six disconnects as permitted in section 230-71 shall be grouped. (230-72(a))
- 281. Ground fault protection is required on each 1000 amperes or more, 4W, 277/480 volts wiring system of a service or a feeder disconnecting means. (230-95,215-10)
- 282. Service equipment shall have a short-circuit rating of not less than the available short circuit current and motor(s) contribution at its supply terminals. (230-65)
- 283. A building or other structure shall be supplied by one service. (230-2)
- 284. When more than one building or other structure is on the same property and under single management, each building or structure shall be provided with means for disconnecting all ungrounded conductors. (225-8(b))
- 285. Equipment shall not be connected to the supply side of the service disconnect means. (230-82)
- 286. In a multiple occupancy building occupants shall have access to their service disconnecting means. (230-72(c))
- 287. Provide service load calculation. (Art. 230)
- 288. Service and feeder demand load calculation shall be in accordance with article 220-35. (220-35)
- 289. Submit over current coordination study. (240-12)
- 290. Provide proper over current protection for conductors on circuits. (240-3)
- 291. Over current devices shall be connected at the supply point of under grounded conductors. (240-21)
- 292. Provide short circuit analysis. (110-9, 10)

- 293. Indicate the series combination interrupting rating of over current devices. Identify the fuse class and the circuit breaker manufacturer, model designation, type and electrical rating used as part of series rating. (240-83(c))
- 294. Series combination interrupting rating shall not be used when the second device in the series is subjected to a total connected full load motor current of more than 1% of its AIC rating. (110-3)
- 295. Motor circuit protectors shall not be used as part of a series combination interrupting rating. (110-3)

## **Grounding**

- 296. Provide properly sized electrode grounding conductors on service. (250-5, 220-25, 250-94)
- 297. Separately derived systems shall be separately grounded. (250-5(d), 26)
- 298. When more than one building is supplied by a service, the grounded conductor supplying each building shall be adequately sized and grounded at each building or an equipment grounding conductor shall be provided from the main service to each building. (250-24 & 81)
- 299. All services supplying a building shall have the same grounding electrode system. (250-54 )
- 300. Provide property sized grounding conductors for equipment and raceway systems. (250-95)
- 301. Cold water pipe ground shall be supplemented by an additional ground electrode. (250-81(a))
- 302. All equipment fastened in place or connected by permanent wiring method shall be grounded. (250-42, 43)
- 303. Two or more buildings supplied from common service will require separate ground electrode at each building (250-32).

## **Wiring Methods**

- 304. Conducts entering/leaving cooler and freezers shall be sealed. (300-7(a))
- 305. Provide cable on vertical runs. (300-19)
- 306. Rooms containing raised floors shall have a smoke detection system. (645-2)
- 307. Wiring methods beneath the raised floors shall comply with all requirements of Article 645
- 308. Provide an equipment grounding conductor between remote panel board and service. (680-2(d))
- 309. Provide an equipment grounding conductor for all pool related equipment. (680-25)
- 310. Patient care area receptacles shall be grounded by an insulated copper conductor. (517-13(a))
- 311. Provide the proper wire type (temperature rating) for use in the following applications. (310-13)
- 312. The following branch circuit/ feeder conductors are improperly sized. (310-15)
- 313. Where the number of conductors in a raceway or cable exceeds three, the allowable capacity of each conductor shall be reduced per Table 310-16 to 19 Note 8
- 314. Where the maximum ambient temperature is over 30 degrees Celsius, (86 degrees Fahrenheit), the referenced correcting factors shall apply to conductors. (Table 310-16 to 19)
- 315. Indicate the number of conductors in raceways. (346-6)
- 316. Provide proper conduit sizes. (300-17)
- 317. A separate grounding conductor shall be installed in nonmetallic conduit runs. (347-4)
- 318. Exit signs shall not be used as J-boxes. Show location of required junction boxes. (700-9)
- 319. Indicate type of conduit(s) used. (Appendix C)

- 320. the following outlet, pull or junction boxes are inadequately sized. (370-6, 370-28)
- 321. Provide permanent access to roof mounted equipment (380-8(a))
- 322. Switches, circuit breakers, etc. shall be readily accessible. (380-8 (a))
- 323. Provide individual over current protection on the supply protection on the supply size of each lighting and appliance branch circuit panel board. (384-16(a))
- 324. Provide weather proof GFCI protected outlets within 25 feet of roof mounted equipment. (210-63, 210-8(b)(2))
- 325. Fire pump circuit shall be encased in no less than 2 inches of concrete. (695-8, 230-6)
- 326. Over current protecting for fire pump services shall provide short circuit protection and shall be set to carry fire pump motor locked rotor current indefinitely. (695-8(c))
- 327. Provide an emergency source of power for fire pump. (BC 904.1.2, NFPA 20-96 6-2, 700-12)
- 328. No disconnecting means shall be installed within the fire pump feeder circuit. (695-3(c))
- 329. Transfer of power shall take place within the fire pump room. (BC 904.1.2, NFPA 20-96, 6-6.5)

### **Motors**

- 330. Provide the nameplate current rating of the following (430-6,-22 Exception 1, Table 430-150):
  - a. Locked-rotor current or torque motors. .
  - b. AC adjustable voltage motors.
  - c. Low Speed (1200 RPM or Less) motors.
  - d. Multi-speed motors.
  - e. Noncontinuous duty motors.
- 331. Indicate the Duty-cycle service and designs of motors. This information should include the motors duty and time rating. ( 430-22, Table 430-22(a) Exception)
- 332. Provide proper conductor size for motor(s). (430-22(a), -24)
- 333. Provide overload protection for motor(s).
- 334. Provide proper short circuit protection for motor(s) (specify breaker/fuse type). (430-52)
- 335. An individual branch circuit is required for each motor over one horsepower or 6 amperes of full load current. (430-53(a))
- 336. Provide properly located disconnects on motor(s) (430-101, -102, -103, -109, -110).

### **Transformers**

- 337. Provide over current protection on the primary of the transformer. (450-3)
- 338. Provide over current protecting for the secondary conductors from the transformer. (240-21)
- 339. Provide adequate ventilation in transformer room(s). (450-9) )
- 340. Indicate transformer(s) secondary tap length(s). (240-21)
- 341. Provide ground electrode conductor sized per (250-66). Show termination point (ground rod / cold water / building steel).

## **Clinics**

- 342. Indicate type of clinic(s). (BC 422A)
- 343. Equipment classified for life-support purpose shall be supplied from an essential system as required per sections 517-30 through 517-35. (517-50(c)Exemption 1)
- 344. Indicate if the clinic is or will be licensed by the State of California. (BC 422A.2)
- 345. Provide a generator to supply all the loads in the ambulatory surgical clinics. (517-50Exp.2)
- 346. Wiring within an ambulatory surgical or hemodialysis clinics shall be in accordance with 517-50(d) & (e)
- 347. Provide a nurse call system in the birthing clinic. (BC 422A.16)
- 348. Operating room of surgical clinic shall include a clock and elapsed timer and an x-ray film illuminator. (BC 422A.17.1)
- 349. If Ethylene Oxide sterilizers are on emergency power, the exhaust system shall also be supplied from the emergency source. (BC 423A4.4)
- 350. Provide an audible and visual alarm system to alert sterilizer operating personnel. (BC 423A4.5)
- 351. Provide two branch circuits at the patient bed location in a surgical clinic. One circuit shall be from a normal panel and other from an emergency panel. (517-18(a.1) Ex. 2)

## **Hazardous Locations**

- 352. Provide hazardous classifications by class, division, or zones and group, and show boundaries of the hazardous area(s). (Art 500)
- 353. Wiring in hazardous areas shall comply with the Code provisions for those areas. (Art 500 thru 516)
- 354. Provide conduit seals at boundaries of hazardous areas. (501-5(c)(6))
- 355. Submit details of the natural or mechanical ventilation provided in garage area(s) (511-3(a))
- 356. Provide GFCI protection for outlets in repair garages. (511-10)
- 357. Classify the pits in the garage area. (511-3(b))

## **Emergency Circuits**

- 358. Provide (a) properly sized emergency power source(s) for required emergency load(s). (700-5)
- 359. A completely independent raceway and wiring system shall be installed for emergency circuits. (700-9)
- 360. Emergency lights shall be provided a uniformly distributed minimum of 1.0 fc illumination at floor level. Provide foot-candle calculations. (BC1003.2.9.1)
- 361. Provide emergency exit illumination for space/area with occupant load of 100 or more. (BC1003.2.9.2)
- 362. Emergency exit illumination shall be supplied from a generator, storage battery or a unit equipment. (BC 1632.6.4.3, 700-12)
- 363. Provide exit signs. (BC 1003.2.8.2)
- 364. Provide low level exit path marking. (BC 1007.2.8)
- 365. Provide battery calculation. (700-5, 12(a))
- 366. Storage batteries shall comply with article 480.
- 367. Provide proper type and size of over current protection for high voltage feeders. (710-20, 240-100)



- 368. Medium voltage equipment shall be listed by an approved testing laboratory. (110-2)
- 369. Provide detail and specifications for the following:
  - a. Cables
  - b. Over current protective devices (electrical ratings, listing, type, AIC rating, close-and-latch-rating, breakers "K" factor, MVA rating, continuous current rating, fuse time-current curves, etc.)
  - c. Transformer(s) (rating, listing, etc.)
  - d. Raceway(s) (size, material, etc.)
  - e. Terminations and Splices.
  - f. Pull boxes and Manholes.
  - g. Disconnect devices (type, size, electrical rating, magnetizing current interrupting ratings, cable charging rating, fault close rating, etc.)
  - h. Switchgear(s), substation(s) , Unisubstation(s)
  - i. Grounding impedance (continues and wait rating, etc.)
  - j. Bracing
- 370. Clarify the grounding method used. Include information on size and termination method. (ART 250)
- 371. Provide detail on high impedance grounding. (Art 250)
- 372. Provide capacitive current charge calculation. (250-51)
- 373. Provide detailed short circuit analysis including a coordination study. The analysis should reflect the three and single phase fault as well as ground fault and line to line ground fault (when applicable) (110-9, 10, 240-21)
- 374. Provide a coordination protection for the motor circuit. This coordination shall include fault current overload, circuit conductors, and motor control apparatus. (430-125)
- 375. Identify all Class 2 and Class 3 circuits. (725-31)

## **Title 24 Lighting**

- 376. Submit lighting calculations on approved lighting compliance forms for new building or additions and alterations on existing building. (Section 146)
- 377. The certificate of compliance shall be signed by the person responsible for its preparations prior to plan check approval. (section 10-103(a))
- 378. Electric resistance heating systems shall not be used for space heating. (section 144(g), 151(f)(7))
- 379. Certificate of compliance form LTG-1-C/OLTG-1-C shall be printed on plans. (Section 10-103(a))
- 380. One or three lamp fluorescent luminaires within 10' shall be tandem wired. (section 132)
- 381. Lamps used in luminaires for general lighting in kitchens and bathrooms shall have efficacy of not less than 40 lumens per watt. ( Section 130(b), 150(k))
- 382. Provide list of lighting mandatory measures on plans. (Section 10-103(a))
- 383. Provide automatic shut-off control for lighting with override switching device. (Section 131(d) 1.2)
- 384. Provide an independent switching or control device for each area enclosed by ceiling-height partitions. (Section 131(a))
- 385. Provide dual switching for the general lighting. (section 131(b))
- 386. Provide an independent control for at least 50% of the lights in daylight areas. (Section 131(c))

- 387. The switching or control device shall be located so that a person using the device can see the lights or area controlled by the switch. (Section 131(a))
- 388. Display lighting shall be separately switched on circuits that are 20 amperes or less. (Section 131(e))
- 389. Exterior lighting controlled from interior building lighting panels shall be controlled by directional photocell or astronomical time switch that automatically turns off the exterior lighting when daylight is available. (Section 131(f))
- 390. Comply with TITLE 24 2005 California Energy Efficiency Standards; provide all required compliance forms and mandatory measures on the plans.

## **Fire Alarm**

- 391. Provide fire control panel (905.12, CBC).
- 392. The fire control panel shall be approved by the Fire Department.
- 393. Correct the colors of the lamp-type indicators of the remote control panel in accordance with Section 905.13.1, CBC.
- 394. Exit signs shall be supplied by two circuits, one from normal source and one from emergency source. (BC 1003.2.8.4, 700-17)
- 395. Provide a fire warning system. (BC Chapters 3 & 4)
- 396. The fire warning system shall be supplied from an approved source. (NFPA 72-1996)
- 397. The fire warning panel shall be connected ahead of the main disconnect. (230-82 Ex.5, 701-11(e), 240-21, NFPA 72-1999) or face with battery back-up, see Fire Department requirements.
- 398. An individual multi-wire branch circuit is required to supply the fire warning system unless a primary battery supplies the trouble signal devices of the signaling system. (NFPA 72-1999)
- 399. Fire warning equipment shall be listed by an approved testing laboratory and shall be approved by the State Fire Marshall. (110-2)
- 400. Fire warning system conductors shall be installed in metal raceways unless they are specifically approved for exposed installation. (760-14, 24, 28)
- 401. Power limited circuit conductors shall run separately from non power limited circuits. (760-52)
- 402. Provide a worst case DC voltage drop calculation using chapter 9, table 8 of NEC. (210-19(a))
- 403. Indicate type of fire protective signaling systems. (power or Non-Power limited). (760-3)
- 404. Fire protective signaling systems shall be equipped with approved control panel(s) and annunciator(s). (NFPA 72-1999)
- 405. Provide battery load calculation. (NFPA 72-1999)
- 406. The secondary battery load calculation shall include the total system supervisory and alarm loads. (BC 3505.1 Subsection 3-8.13.3.1)
- 407. Provide approved strobes in common corridors or hallways. (NFPA 72-1999)
- 408. Provide a fire control center, fire alarm, and fire warning system, public address system and two way communication system. (NFPA 72-1999, BC 403)
- 409. A readily accessible control switch shall be provided to shut off electrically operated machinery room(s). (MC 1108.4)
- 410. No electrical equipment other than specified in Mechanical Code Section 1108 shall be located in machinery room(s). (MC 1108.1)

- 411. Purging fans and associated equipment in a refrigerant room containing refrigerants other than a group A1 or B1 shall comply with the requirements of Article 500 Class 1 Division 1 area. (MC 1107.8)
- 412. Provide a readily accessible emergency ON- only fan control switch outside of machinery room(s). (MC 1107.5)
- 413. Provide a readily accessible machinery room fan ventilation system switch outside of the room's main entrance. (MC 1107.6)
- 414. Machinery rooms shall have approved refrigerant vapor detectors and shall activate visual and audible alarms. (MC 1106.4)
- 415. Refrigerant detection and alarm system shall be powered and supervised as required for fire alarm system in accordance with UFC Standard 14-1. (MC 1120.2)
- 416. The detection and alarm systems shall be annunciated at an approved location in accordance with the fire code. (MC 1120.3)
- 417. Permanently wire smoke detector with battery backup is required for the following: (BC 310.9.1.4)
  - a. Sleeping rooms.
  - b. Area giving access to sleeping rooms.
  - c. Each level of stairways and basement.
  - d. Upper level of split story or basement floors.
  - e. Each level of split until containing a lower level sleeping room.
  - f. A room opens to a hallway serving a bedroom, and the hallway, provided that the ceiling of the room exceeds the hallway by 24 inches.
- 418. Plans and specifications shall include location of all alarm-initiating and alarm-signaling devices; annunciation; power connection; voltage drop calculations; make, model and state fire marshal listing number for all equipment, devices and materials requiring listing; and wiring or cable type and sizes. (CFC 1001.3)
- 419. Provide a copy of the installing California State Contractors License with registration number, class and expiration date.
- 420. Provide name and phone number of the project coordinator, owner, system designer and supplier.
- 421. Specify all Initiating, Indicating, and Signaling line circuit styles currently installed and what is being installed.
- 422. Provide a legend for all symbols.
- 423. Provide two copies of plans and equipment data sheets.
- 424. Highlight equipment data sheets for all fire alarm equipment to be installed (style, type, model, amps, volts, mfg., etc.) for the fire alarm system(s) and security system if a combination panel is used.
- 425. Provide voltage drop, circuit amperage, and power supply (battery) calculations to include standby and alarm conditions, include security if a combination panel is installed on the blueprint.
- 426. Provide voltage drop calculations for all circuit(s) 10% maximum (ordinance), point-to-point method or OHM's law. Calculations are for the area that work is being performed.
- 427. Provide a diagram showing a typical wiring configuration for each of the system devices and the point of connection at the panel. Dedicated zones shall be identified on these drawings.

- 428. Indicate the location of all devices, end of line (EOL) devices, conduit/wire runs, conduit sizes, number and size of conductors, list conduit fill (40% max. NEC 346-6) for each device and/or circuit for the area work is being performed. Initiating Zone 1 shall be indicated as Z-1 and Indicating Circuit 1 shall be indicated as C-1. The zone indication shall be placed adjacent to the appropriate end-of-line device(s).
- 429. Provide a riser diagram indicating the device installation, wiring sequence, the number of devices per zone and zone assignments for the area work is being performed. All other areas just show the total amps and watts used per circuit and zone identification.
- 430. Provide a sequence of operation matrix.
- 431. Drawings shall also include details showing the installation of pull stations and strobes (include installation height), FACP, door hold open devices, heat and smoke devices.
- 432. Automatic detection devices shall be located in accordance with their listing(s).
- 433. When strobes are added or relocated, add the following note to the drawings: "Strobes in the same room and all strobe visible from the same location shall be synchronized to flash simultaneously."
- 434.